USS Makin Island (LHD 8)

USS Makin Island is the first hybrid propulsion drive amphibious assault ship. The ship runs on two auxiliary propulsion motors (APMs) powered by the ship's electrical grid at low speeds (<12 knots) and on gas turbines at higher speeds. This results in lower fuel consumption per average mile traveled, reduced carbon emissions, and lower annual refueling costs.

Auxiliary Drive for Low Speeds

Amphibious assault ships spend approximately 75% of their underway time traveling at 12 knots or less. Therefore, Makin Island can use its electric auxiliary drive the majority of the time, saving fuel and reducing wear and tear (and related maintenance costs) on the ship's primary engines.

Steam-Free Steaming

On Makin Island, the steam plant that powers the majority of equipment on older Navy ships has been replaced by electrically powered systems, which are in turn controlled by a computer-based machinery control system (MCS). The MCS controls and monitors all damage control, ship propulsion, ballasting and de-ballasting, fuel fill, and selected auxiliary machinery. Eliminating the steam plant also reduces engineering department manning requirements and eliminates the workplace hazards associated with boiler systems.

Gas Turbines Improve Readiness

In addition to being the first "large deck" hybrid drive U.S. Navy ship, Makin Island is the first amphibious assault ship to be powered by gas turbines. The gas turbine/APM combination provides comparable range to steam turbine-powered ships of similar size, but uses less fuel. The combination also greatly reduces the amount of time required to bring the ship's engines online, improving the ability to quickly get underway and respond to emerging threats or humanitarian crises.

Other Efficiencies

Beyond the environmental and energy-saving advantages of USS Makin Island's propulsion system and all-electric design, the ship uses a stern flap to improve fuel economy, anti-fouling coatings to minimize hull drag, and solid state lighting to reduce energy use.

Interesting Facts

- USS Makin Island was commissioned on October 24, 2009.
- The ship is powered by two 35,000 hp General Electric gas turbines engines and six 4,000 kW Fairbanks Morse diesel generators.
- The ship was built by Ingalls Shipbuilding (now part of Northrop Grumman Shipbuilding).
- The ship typically embarks with approximately 100 officers and 1,100 crew, and can carry about 1,700 Marines.
- The ship can carry up to three Landing Craft Air Cushion vehicles (LCACs) or 39 Expeditionary Fighting Vehicles (EFVs).
- The ship typically carries four CH-46 Sea Knight helicopters, six AV-8B Harrier attack planes, and six antisubmarine warfare (ASW) helicopters.
- On its first voyage from a shipyard in Mississippi to San Diego, the ship's hybrid engine saved more than one million gallons of diesel fuel, saving taxpayers $2.2 million.
- Over the course of Makin Island's lifecycle, the U.S. Navy anticipates a savings of about $250 million in annual fuel costs.

For More Information

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